

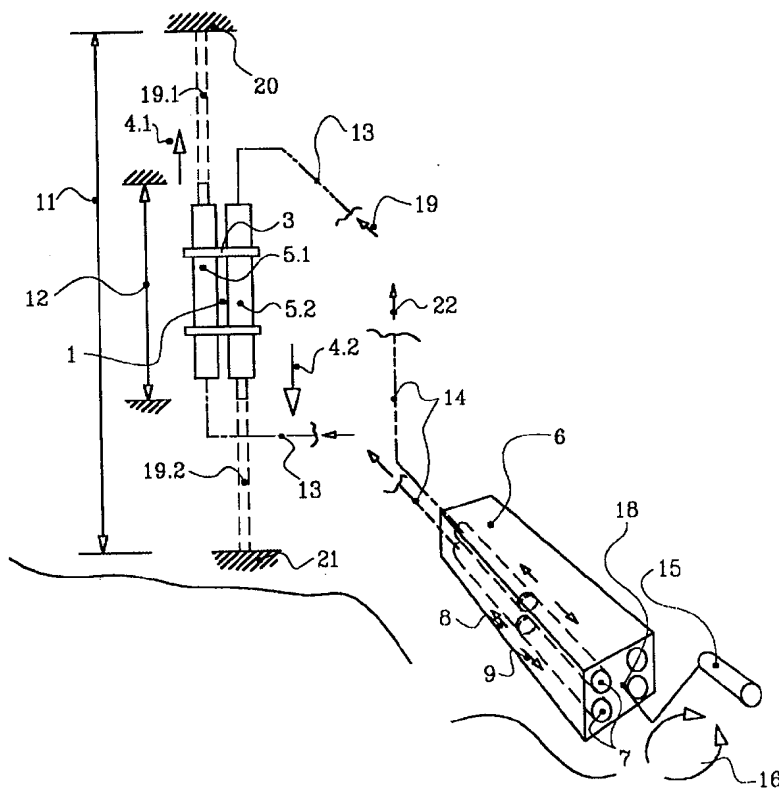


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>A47B 9/10, A47C 3/30, B25H 1/16 //</b> <b>A47B 9/20, A47C 3/40</b>		<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 99/55197</b> <b>(43) International Publication Date:</b> 4 November 1999 (04.11.99)
<b>(21) International Application Number:</b> PCT/DK98/00180 <b>(22) International Filing Date:</b> 7 May 1998 (07.05.98)  <b>(30) Priority Data:</b> 00142/98 15 April 1998 (15.04.98) DK  <b>(71) Applicant (for all designated States except US):</b> SYSTEM B8 MØBLER A/S [DK/DK]; Martin Bachs Vej 3-5, DK-8850 Bjerringbro (DK).  <b>(72) Inventor; and</b> <b>(75) Inventor/Applicant (for US only):</b> NIELSEN, Tyge, Frank [DK/DK]; Kristiansvej 6, DK-8686 Skanderborg (DK).  <b>(74) Agent:</b> HARALDSTED, Hans, H.; Ing.-& Handelsfirma ApS, Ellegaardspark 19, P.O. Box 107, DK-3520 Farum (DK).			<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i> <i>With amended claims.</i> <i>In English translation (filed in Danish).</i>

**(54) Title:** TELESCOPIC ARRANGEMENT WITH DOUBLE STROKE**(57) Abstract**

Telescopic arrangement (1), especially a hydraulic (14) arrangement, and especially for system of furniture, but also for other systems or arrangements (1), which shall be lifted (4.1/11, 4.2/11) or lowered (12). It contains a coupled (3) double stroke (4.1, 4.2) arrangement of cylinders (5.1, 5.2). The respective stroke of these cylinders (5.1, 5.2) is directed opposite to each other (19.1, 19.2). The opposite directed strokes could ideally move along the same line.



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**Telescopic arrangement with double stroke**

The invention relates to a telescopic arrangement, especially hydraulic, and especially for system of  
5 furnitures, but also other systems or arrangements, which shall be lifted or lowered.

Hitherto have one by the system of elevating especially used of the branch of furnitures, where one  
10 especially have to had strokes as an example over 35 cm, with an elevating of weight as an example from 100 kg and over that, used solutions of mechanical screw-spindles.

The disadvantage by this system is that it is very  
15 expensive, complicated and complexed to use.

Hitherto have one also establish elevating systems via hydraulic. Where one then have had one cylinder there in its self has the whole stroke.

20 One of the disadvantage has here been that the lower minimum high has been limited, as the piston rod fully extended necessary also must have an extra length of guiding/holding.

In the same time has the arrangement of pump for an  
25 synchron elevating or lifting, especially if it has been made as a pump-unit of magazine cylinders, been impossible to made compact both according to the thickness as according to the stroke. As then the pump unit on a furniture, almost will be impossible to  
30 place, because of now its outer extra necessary larger size.

The system will moreover also here be expensive to established.

35 The purpose with the invention is, to provide an arrangement for lifting or lowering of this in beginning mentioned sort or kind, where one obtain a

relative long stroke, with a relative large stationary as dynamic activated lift, establish of/by one in itself compact embodiment or arrangement of elevating.

5

The new of the invention is that the telescopic arrangement 1 especially can contain of a coupled 3 double stroke 4.1 and 4.2 arrangement of cylinders 2. Where the one 5.1 of the compact cylinder arrangements 2 is turning opposite the other, and with a diametrically opposite directed stroke 4.1 as 4.2. And where the "stroke" 4.1 or 4.2 according to the direction of movement or the direction of operation 4.1 as 4.2 ideal for that matter generally has a line  
10  
15 convergence.

With the new telescopic arrangement 1 according to the invention one can obtain that one compact and very easy can establish one in itself generally self  
20 guided and leaded unit 2 out of area of the elevating. Generally with standard components as an example hydraulic cylinders 5.1 as 5.2. And where one by a bulding together 3 according the invention extend the area of function of thies standard components 5.1 and  
25 5.2 to a double lenght of stroke 11 with generally the same possibility of loading or limit, as for one cylinder 5.1 or 5.2.

The telescopic arrangement 1 will especially be  
30 driven optimal, where one as an example use hydraulic. And where the system of pump 6 as an example is of the type magazine cylindres 7, which is couble toghter "as bundles" 8 and 9. And for that matter ideal has been force guided synchronic 18 in the  
35 stroke. As an example 2 cylinders 5.1 and 5.2 here in the same time 3 will be able to be driven or lifte

4.1 as lower 4.2 as an example a telescopic leg 10 or a like unit 10.

The invention shall after this be explain neare in  
5 the following according to the drawing, where

Fig.1 shows, seen in a generally perspective a lifting/lowering system 5.1 and 5.2, where an arrangements of the hydraulic cylinder 5.1 as 5.2 is  
10 established respectively as telescopic leg 10. And where a pumping system 6 for that matter also a shown. As the telescopic arrangement 1 or elevating unit 1 here is made as 2 opposite pointing cylinders 5.1 as 5.2. Which in the telescopic arrangement 1 are  
15 coubled 3 "floating" together by the houses of the cylinders 5.1 and 5.2.

The stroke 4.1 and 4.2 of the arrangement 1 can be seen indirect as a "maximum-stroke" 11, as opposite  
20 as a "minimum-stroke" 12. As it clearly can be seen that the minimal high 12 "only" almost is limited of the high of the cylinder house 5.1 as 5.2. And if the 2 opposite pointing pressure cylindres 5.1 as 5.2 are builed together 3 in the same niveau or plan as shown  
25 on Fig.1, then will this establish an extrem low high of build 11.

An optimum example on a pumping arrangement 6 according to the invention is also shown in Fig. 1. As  
30 there here are shown a magazine system 7 containing of coubled and mutual forced guided 18 pumping cylinders 7.

For the shown arrangement 2 is used 2 cylinders, here  
35 indicated by its no. 5.1 as 5.2. As a forward conveying 8 as a backward conveying 9 in the house of

the pump 6 respectively will course an synchron lifting 4.1/4.2 or 11 as lowering 17. Especially if the dimension of the cylinders in the pump 6 as at the telescopic arrangement 1 generally are the same.

5 An ideal guiding or leading of the pipe-line 13 of the oil pressure pipe line 19 from/to each cylinder 5.1 as 5.2, will also ideal be able to be establish only as one pipe line 13 to/from each cylinder 5.1 as 5.2.

10

The pipe line 14 to/from lifting/lowering arrangement 1 to/form the pump arrangement 6 can be solid mounted or fixed to the telescopic arrangement 1. While thies 13 inside in the telescopic-arrangement 1, as the present embodiment shows, shall be made or mounted as

15 flexieble and loose movable.

On the pumping arrangement itself 6 in Fig.1 is shown an example on an activating arrangement 15. 16 and

20 18, here as a revolving handle 15. Where one then manual here shall turn 16 to activat the telescopic unit for lifting 4.1/4.2 as for lowering.

The system 1, 2 and 6 could also be establish motor

25 driven.

Fig.2 shows an activated and moved telescopic arrangement 1, with a shown embodiment with an ideal placing of the comming supplying lines or pipes 14 in

30 the top of the arrangement. And where the arrangement 1 for that matter is shown at its or under the maximum lenght of a stroke 11.

Fig.3 shows a compressed telescopic arrangement 1,

35 in its minimal high of stroke 12.

The house of the telescope 1, contain of here as an

example of 3 coubled and sliding shells or cases 17.  
Ideal made of aluminium, steel, plast or like. And  
where the cases 17 mutual are guided as an example  
via a covering of plast or like material of bearings.

CLAIMS

1. Telescopic arrangement (1), especially hydraulic (14), and especially for system of furniture, but also other systems or arrangements (1), which shall be lifted (4.1/11 as 4.2/11) or lowered (12), characteristic of, that it contains of a coupled (3) of a double stroked (4.1 as 4.2) arrangement of cylinders (5.1 as 5.2), where the one arrangement of cylinders (5.1 or 5.2) turn opposite the other, and with an opposite pointing stroke, and where the opposite turned strokes (4.1 or 4.2) in the direction of movement or the direction of the operation (19.1 as 19.2) ideal can have a line covering or a line convergence.

2. Telescopic arrangement (1) according to claim 1, characteristic of, that a joint coupled (3) arrangement of cylinders (5.1 and 5.2) is floating fixed (3) to or by each other diametrically opposite directed houses of cylinders (5.1 as 5.2).

3. Telescopic arrangement (1) according to claim 1, characteristic of, that an arrangement of lifting cylinders (5.1 and 5.2) ideal can be covered of one in itself guided, but following and in it self displacing telescopic mantle or housing or like arrangement (17).

4. Telescopic arrangement (1) according to claim 1, characteristic of, that the telescopic arrangement (1) or like (1) in its top (20) as its bottom (21), ideal can have an arrangement of mounting -or fixing for the diametrically opposite turned end of application of the cylinder



rods ( 19.1 and 19.2) or the end of the piston rods itself (19.1 as 19.2) or like.

5.        Telescopic arrangement (1) according to  
5 claim 1, c h a r a c t e r i s t i c   o f, that  
lines or pipes (13) for the activating of the arrangement of lifting/lowering (4.1 as 4.2) ideal can be mounted among here fixed and leaded in from the top (20) as an alternative from the bottom (21) of  
10 telescopic arrangement (1) or like (1), and that  
thies or the pipes or lines (13) into the cap of the telescop or like arrangement (17) under the operations (4.1 as 4.2) generally are flexieble and movable.

15

6.        Telescopic arrangement (1) according to  
claim 1, c h a r a c t e r i s t i c   o f, that  
where the means of power or energy is of hydraulic kind (22), that there can each unit (5.1 as 5.2) of  
20 an arrangement of a double strok cylinders(5.1/5.2)  
ideal in the same time be synchronic activated (18/15-  
/16), respectively be driven forward (4.1/4.2) as be lowered (12) via an arrangement of pump (6), especially containing of more side by side in or as  
25 laying magazines, synchronic and moved (8 as 9) in the  
same direction, as activated (16) and hydraulic  
cylinders (7) fixed together, especially ideal of the  
same size and dimension, and with an activating  
cylinder (7) for each dirementrally opposite turned  
30 cylinder of telescop (5.1 as 5.2), and where thies  
activating cylinders (7) for that matter ideal can be forced guided together.

7.        Telescopic arrangement (1) according to  
35 claim 1, c h a r a c t e r i s t i c   o f, that a  
mutually movable or displacable house of telescop

(17) or like arrangement (17) for units of lifting/-  
lowering (11/12) ideal can be guided or leaded in its  
or they mutual parts via a padding or with covering  
means or parts of material of bearings as an example  
5 as plastic, metal or like.

**AMENDED CLAIMS**

[received by the International Bureau on 8 July 1999 (08.07.99);  
original claims 1-7 replaced by new claims 1-4 (2 pages)]

1. Method for integrated "ad hoc" stop arrangement  
(8 and 9) on especially telescopic elevating arrangement (1) with especially coupled (3) and driving  
5 together as opposit turning hydraulic elevating (4.1 and 4.2) cylinders (5.1 and 5.2), c h a r a c t e -  
r i s t i c o f, that stop as "ad hoc" locking arrangement for the driving together cylinders (5.1 and  
10 5.2) has been establish and integrated qua an arrangement of postion guided pumps (6).

2. Stop arrangement (8 and 9) for telescopic  
elevating arrangement (1) with opposit turned and  
15 simultaneous cylinder units (5.1 and 5.2) according to claim 8, c h a r a c t e r i s t i c o f, that  
the opposite turned as simultaneous cylinders (5.1 and 5.2) in a telescopic cylinder unit (1), ideal as  
an example can be activated for an exact mutual  
20 synchronous movement ahead, as return, as stop by a pump battery (6) with screw/nut-guiding or activating  
or like, and especially ideal with parallel mutual laying pump cylinders (7) for each cylinder unit (5.1  
as 5.2) on/in the single unit of telescopic arrangement (1) or generally in an arrangement with two  
25 cylinder (5.1 and 5.2) for each telescopic unit (1).

3. Stop arrangement (8 and 9) for telescopic  
elevating arrangement (1) with opposit turned and  
30 simultaneous cylinder units (5.1 and 5.2) according to claim 8 as 9 , c h a r a c t e r i s t i c o f,  
that the pump arrangement (6) for the telescopic unit of cylinder (1) can consist of a worm/screw guided  
arrangement of pump-cylinder (7), where a guided  
35 straight lined force ( 8 as 9) of this can be made indirect via a sledge/ pal guided yoke for each

arrangement of pump ( 6 ) of the telescopic unit (1).

4. Telescopic arrangement (1) with belonging  
accessories according to claim 1, c h a r a c -  
5 t e r i s t i c of, that lines or pipes (13) for  
the activating of the arrangement of lifting/loving  
and stopping (4.1 as 4.2) ideal can be mounted among  
here fixed and leaded in from the top (20) as an  
alternative from the bottom (21) of the telescopic  
10 arrangement (1) or like (1), and that thies or the  
pipes or lines (13) into the cap of the telescop or  
like arrangement (17) under the operations (4.1 as  
4.2) generally are flexieble and movable.

Fig.1

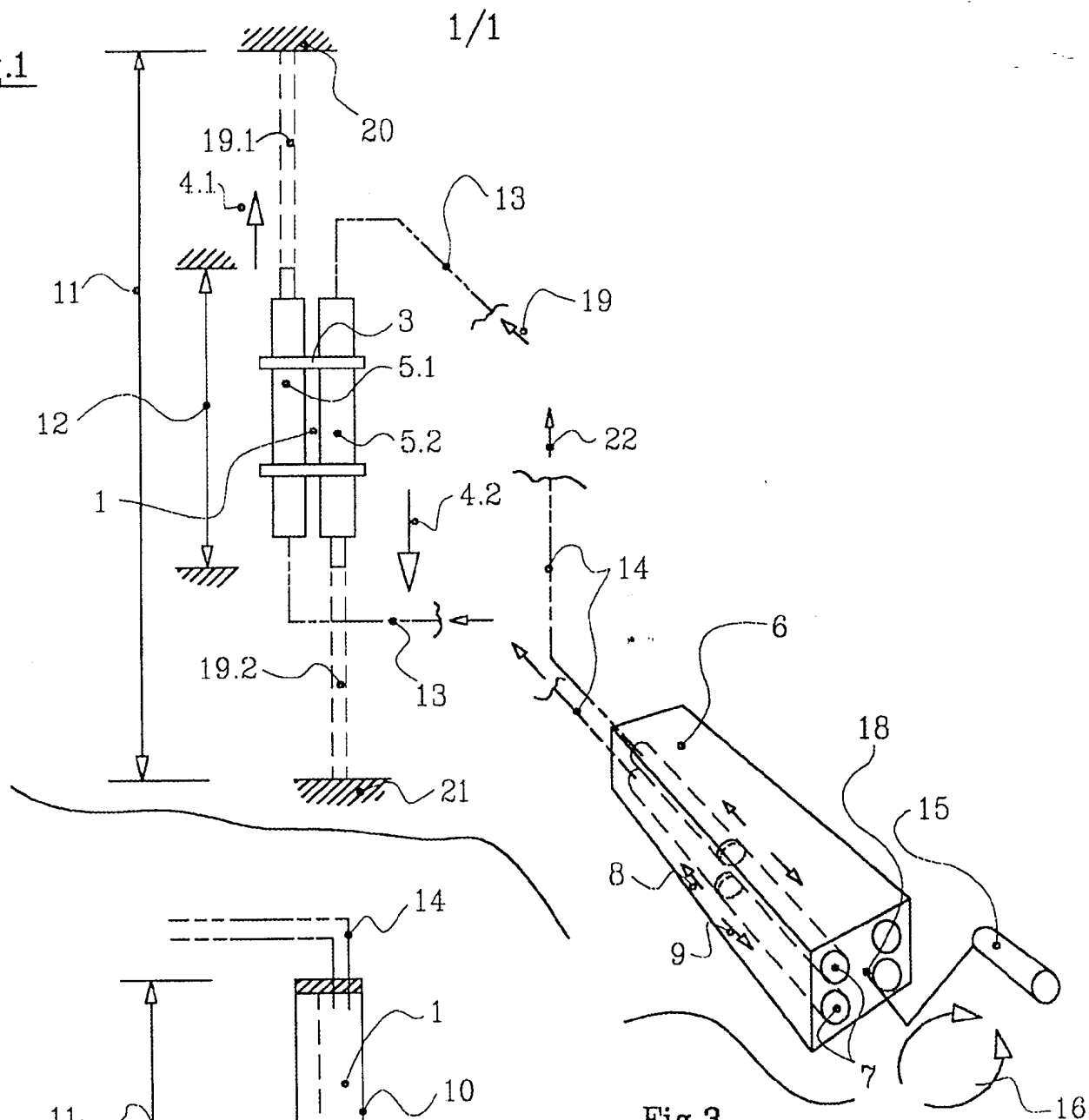
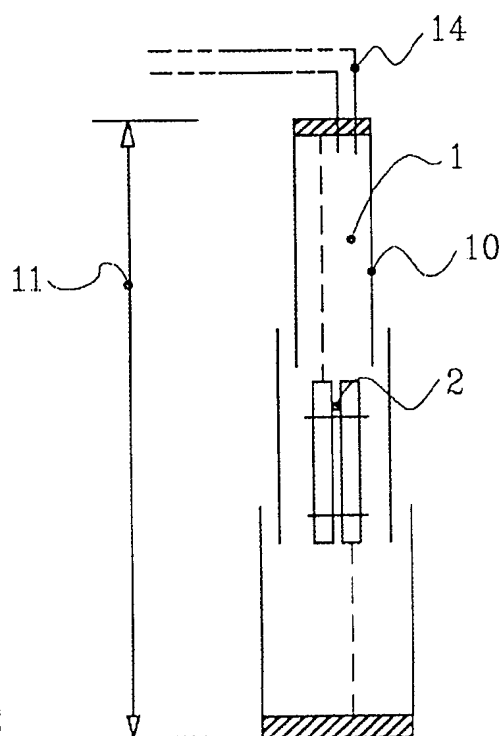
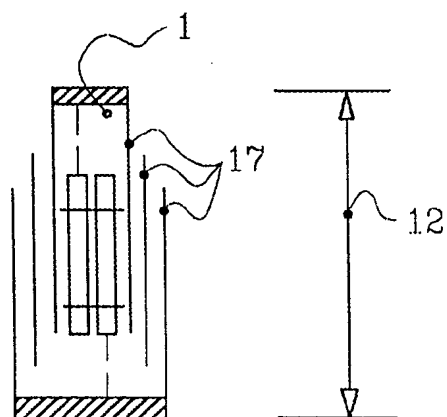
Fig.2

Fig.3



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 98/00180

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: A47B 9/10, A47C 3/30, B25H 1/16 // A47B 9/20, A47C 3/40  
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## B. FIELDS SEARCHED

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2691889 A1 (SOCIETE JEANNEAU - CONSTRUCTIONS NAUTIQUES SOCIETE ANONYME), 10 December 1993 (10.12.93) --	1-7
A	SE 449044 B (ERIK HALLBERG), 6 April 1987 (06.04.87) --	1
A	US 5322025 A (SHERMAN ET AL), 21 June 1994 (21.06.94) --	1
A	US 5553550 A (DOYLE), 10 Sept 1996 (10.09.96) -- -----	1

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

21/12/98

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Patent document cited in search report			Publication date	Patent family member(s)	Publication date
FR	2691889	A1	10/12/93	NONE	
SE	449044	B	06/04/87	SE 8402001 A	12/10/85
US	5322025	A	21/06/94	NONE	
US	5553550	A	10/09/96	CA 2145265 A	01/10/95